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PREDICTING A STUDENT'S VOCATIONAL CHOICE.

BY- HOLLAND, JOHN L. LUTZ, SANDRA W.
AMERICAN COLLEGE TESTING PROGRAM, IOWA CITY, IOWA

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THE PREDICTIVE VALIDITY OF A STUDENT'S EXPRESSED VOCATIONAL CHOICE WAS COMPARED WITH THE PREDICTIVE VALIDITY OF HIS SCORES ON A VOCATIONAL PREFERENCE INVENTORY. THE DATA FOR THE STUDY WAS FURNISHED BY TWO AMERICAN COLLEGE SURVEYS. STUDENTS FROM TWO NATIONWIDE SAMPLES OF 28 COLLEGES WERE POLLED FOR THEIR VOCATIONAL CHOICES AND WERE GIVEN THE SIXTH REVISION OF THE VOCATIONAL PREFERENCE INVENTORY. EIGHT MONTHS OR A YEAR LATER, THEY WERE POLLED AGAIN FOR THEIR VOCATIONAL CHOICES. VOCATIONAL CHOICES WERE CATEGORIZED ACCORDING TO A SIX CATEGORY CLASSIFICATION SCHEME WHICH CODED 99 VOCATIONS INTO THESE CLASSES--REALISTIC, INTELLECTUAL, SOCIAL, CONVENTIONAL, ENTERPRISING, AND ARTISTIC. RESULTS INDICATE THAT ASKING THE STUDENT ABOUT HIS VOCATIONAL CHOICES OR ASKING HIM ABOUT HIS VOCATIONAL INTENTIONS AND ROLE ARE ALMOST TWICE AS EFFICIENT AS THE VOCATIONAL PREFERENCE INVENTORY IN PREDICTING VOCATIONAL CHOICE. THE STUDY SUGGESTS THAT INTEREST INVENTORIES SHOULD BE USED WITH GREATER DISCRIMINATION. (WR)

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John L. Holland
Sandra W. Lutz

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Summary

This study compares the forecasting value of a student's initial report of his vocational choice and vocational role with the Vocational Preference Inventory. The results of the present study indicate that we can predict later vocational choices most accurately by one of two simple methods: (1) ask the student about his first two vocational choices, or (2) ask him once about his vocational intentions and then ask him for his preferred vocational role. Either of these methods is almost twice as efficient as the Vocational Preference Inventory.

Some implications of the findings for the Student Profile Section of the ACT assessment and for student counseling and research are discussed.

Predicting a Student's Vocational Choice

John L. Holland and Sandra W. Lutz

For many years, textbook writers, vocational counselors, and educational researchers have deprecated a student's vocational choice as being undependable from one year to the next. For sound guidance, they usually suggest that an interest inventory be used to forecast what will happen in the student's vocational future. As a result of this belief, there have been few attempts to learn just how well a student's untutored vocational choice forecasts his choice at a later date, and how well an interest inventory predicts this same choice. This comparison is especially pertinent to the ACT program because, in the Student Profile Section (Part V of the ACT tests), a student is asked to report his choice of vocation as well as his choice of major field and his preferred vocational role. If these items have little forecasting ability, then perhaps an interest inventory or some other guidance inventory should be substituted.

The goal of the present study is to examine the predictive validity of a student's choice of vocation and to compare the predictive validity of this self-expression with his scores on a vocational preference inventory (Holland, 1965). The present study grew out of some incidental analyses in an earlier study of college students of superior scholastic achievement that demonstrated the high validity of self-expression and the low validity of both the Strong Vocational Interest Blank and the Vocational Preference Inventory (Holland, 1963). The present study repeats this earlier study

but uses a more representative group of college students.

Method

The data for the present study come from two American College Surveys described earlier by Richards, Holland, and Lutz (1966). Students were polled for their vocational choices and given the sixth revision of the Vocational Preference Inventory (Holland, 1965). About one year later, students were polled again for their vocational choices.

Students came from two college samples: the fall sample of colleges included Amherst, Baldwin-Wallace, Cuyahoga Community, California State at Hayward, Chico State, and the University of Massachusetts. The freshmen in this sample were polled in the fall of 1964 and in May of 1965. The spring sample of college freshmen was polled in May of 1964 and again in May of 1965, when they were sophomores. The spring sample included the following colleges: Arkansas Polytechnic, Baylor, Black Hills State, Burlington Community, California State at Hayward, Colorado State College, Fairmont State, Indiana State University, Kansas State University, Glassboro State, Plymouth State, Mount Mercy, Swarthmore, Southeastern State, Southern Connecticut, Wesleyan, Westbrook Junior, William Jewell, and the Universities of Alabama, Kentucky, North Dakota and Tennessee. Both samples contain students with a great range of scholastic potential, vocational interests, and socio-economic status.

The plan of the study was simple. Student vocational choices were categorized according to the six-category classification scheme developed earlier: Realistic, Intellectual, Social, Conventional, Enterprising, and Artistic (Holland, 1966). Tables 1 and 2 indicate the assignment of vocational

choices to vocational classes for men and women. Students selected

Table 1

A Psychological Classification Scheme for Vocations and Major Fields (Men)

Major Field or Vocation		
	Realistic Class	
Agricultural Science	Forestry	Industrial Engineering
Architecture	Geography	Mechanical Engineering
Civil Engineering	Industrial Arts Educ.	Trade & Industrial Educ.
Farming		
	Intellectual Class	
Aeronautical Engineering	Engineer'g; Gen'l, Other	Oceanography
Anthropology	Engineering Sciences	Other Biolog. Sci. Fields
Astronomy, Astrophysics	Geology, Geophysics	Other Health Fields
Biochemistry	Mathematics Educ.	Pharmacy
Biology	Math., Statistics	Physical Therapy
Botany	Medical Technology	Physics
Chemical Engineering	Medicine	Physiology
Chemistry	Metallurgical Eng.	Veterinary Science
Dentistry	Military Service	Zoology
Electrical Engineering	Natural Science Educ.	
	Social Class	
Clinical Psychology	Exp. & General Psych.	Ind. & Personnel Psych.
Counseling & Guidance	Foreign Language Educ.	Physical Educ.,
Education, General &	Foreign Service	Recreation & Health
Other Specialties	General Social Sciences	Social Work
Educ. of Excep. Children	History	Sociology
Educational Psychology	History Education	Theology, Religion
Elementary Education		
	Conventional Class	
Accounting	Business Education	Finance
	Enterprising Class	
Economics	Other Business & Comm.	Public Relations
Law	Political Science	Purchasing
Management	Public Administration	Sales
Marketing		
	Artistic Class	
Art	General Humanities	Music Education
Art Education	Journalism, Radio-TV,	Other Fine &
Drama	Communication	Applied Arts
English, Creative Writing	Literature	Philosophy
English Education	Music	Speech

Table 2

A Psychological Classification Scheme for Vocations and Major Fields (Women)

Major Field or Vocation		
	Intellectual Class	
Agricultural Science	Chemistry	Other Biol. Sciences
Architecture	Math., Statistics	Physics
Biochemistry	Medicine	Veterinary Medicine
Biology	Natural Science Educ.	Zoology
	Social-Intellectual Class	
Clinical Psychology	Medical Technology	Physical Therapy
Dentistry	Nursing	Political Science, Govt., International Relations
Exp. & General Psych.	Other Health Fields	
Mathematics Educ.	Pharmacy	Theology, Religion
	Social-Conventional Class	
Business Education	Clerical, Office Work	Secretarial Science
	Social-Enterprising Class	
Educational Psych.	Purchasing	Sales
Management, Bus. Ad.		
	Social-Artistic Class	
Counseling & Guidance	History Education	Physical Educ., Recreation & Health
Educ., General & Other Specialties	Home Economics	Public Rel., Advertising
Education of Exceptional Children	Home Economics Educ.	Social Science
Elementary Education	Housewife	Social Work, Group Work
English Education	Law	Sociology
History	Modern Foreign Language Education	Speech
	Conventional Class	
Accounting		
	Enterprising Class	
Marketing		
	Artistic Class	
Art	Journalism, Radio-TV, Communication	Modern Foreign Language
Art Education		Music
Drama	Library Science, Archival Science	Music Education
English, Creative Writing		Other Fine & Applied Arts
Foreign Service	Literature	Philosophy

their career choices from a coded list of 99 careers. All classifications, as well as scoring and then establishing the highest Vocational Preference Inventory Scale Score, were performed by a computer with, we assume, perfect reliability. Tables were then formed to show how students' first vocational choices are related to their second or final choices. The time intervals between choices were 12 months for the spring sample and 8 months for the fall. Using a student's highest scale score, we examined the predictive validity of the Vocational Preference Inventory in the same way.

Vocational Choice and VPI

The prediction of a student's final vocational choice from his first choice eight months earlier is shown in Table 3 for men in the fall sample.

Table 3
Prediction of Final Vocational Choice from First Vocational Choice
(Fall Sample, Men, N=1359)

	Final Vocational Choice									
1st Vocational Choice	Real	Int	Soc	Conv	Ent	Art	Und	% Hits	No Res	N
Realistic	106	13	4	1	12		14	67.9	6	156
Intellectual	31	355	21	14	29	8	57	67.6	10	525
Social	3	8	110	1	12	3	19	68.8	4	160
Conventional		1	2	42	7		7	71.2		59
Enterprising	4	5	15	10	155	4	32	67.1	6	231
Artistic	1	2	8		6	48	10	63.2	1	76
Undecided	4	14	13	4	18	4	53		1	111
No Response		10	8	5	8		9		1	41

The percentage of correct predictions varies from 63.2 to 71.2 percent. The total number of correct predictions always exceeds base rate expectations and cannot be attributed to chance.

The prediction of a student's final vocational choice from his highest score (High Point Code) among six Vocational Preference Inventory scores, obtained eight months earlier, is given in Table 4. The percentage of correct predictions ranges only from 21.5 to 51.4 percent. In this instance, simply asking the student is clearly superior to using the Vocational Preference Inventory.

Table 4

Prediction of Final Vocational Choice from VPI High-Point Code
(Fall Sample, Men, N=1359)

VPI High-Point Code	Final Vocational Choice									
	Real	Int	Soc	Conv	Ent	Art	Und	% Hits	No Res	N
Realistic	43	28	9	7	8		17	37.7	2	114
Intellectual	70	282	45	9	43	14	70	51.4	16	549
Social	8	32	78	9	34	11	37	36.8	3	212
Conventional	11	19	4	33	23		13	31.4	2	105
Enterprising	9	16	17	18	98	2	29	50.8	4	193
Artistic	8	31	28	1	41	40	35	21.5	2	186

Note. --To make single predictions from the VPI, it was necessary to omit students whose two highest scores were tied. This occurrence then necessitated the omission of students with tied profiles from the tables of expressed choice so that the comparisons of the VPI and expressed choice are based on identical samples. If, however, "expressed" choice predictions are based on all students (with and without VPI ties), the differences in predictive efficiency shown in Tables 3, 6, and 9 vary only 1 per cent or less.

The discrepancy between the efficiency of a student's expressed choice and his VPI scores becomes even greater when we select a sub-sample of students whose first two vocational choices, at the time of initial testing, fall in the same vocational class: for example, physics and chemistry, education and social work, art and literature, etc. The exact questionnaire items for this analysis were as follows:

My present career choice is: (Select the appropriate number from the list of coded careers and curricula)

If I could not have my first choice (above) I would select the following occupation: (Select the appropriate number from this list)

Table 5 reveals that sub-grouping students whose first two choices belong to the same vocational class results in a substantial gain in predictive efficiency. Correct predictions range from 73.3 to 85.7 percent as contrasted with 63.2 to 71.2 for the total sample of men. The subgroup of students whose

Table 5

Prediction of Final Vocational Choice for Students Whose First Two Choices Fall in the Same Class
(Fall Sample, Men, N=586)

	Final Vocational Choice									
1st & 2nd Vocational Choices	Real	Int	Soc	Conv	Ent	Art	Und	% Hits	No Res	N
Realistic	36	2	1		6		1	76.6	1	47
Intellectual	18	239	5	4	10	4	21	78.1	5	306
Social			47		3	1	9	78.3		60
Conventional				12	2			85.7		14
Enterprising	1		2	2	69	2	9	78.4	3	88
Artistic			3		3	22	1	73.3	1	30
Undecided		4	1		2	1	5			13
No Response		9	3	3	6		7			28

first two choices fall in different vocational classes are, as expected, less predictable than students whose first two choices belong to the same class. Although the percentages of hits are lower--53.0 to 66.7--they still exceed the percentages obtained by the use of the VPI--21.5 to 51.4.

The results for women in the fall sample are presented in Tables 6, 7, and 8. The main findings for women parallel those for men. The analyses for women are identical to those for men except for the use of a special classification scheme developed for women in which the Social Class is divided into four sub-classes. Expressed vocational choices predict 34.8 to 83.8 percent of later choices (Table 6).

On the average, the VPI in Table 7 predicts final choices less

Table 6

Prediction of Final Vocational Choice from First Vocational Choice
(Fall Sample, Women, N=1386)

	Final Vocational Choice											
1st Vocational Choice	Int	Soc Int	Soc Conv	Soc Ent	Soc Art	Conv	Ent	Art	Und	% Hits	NR	Total
Intellectual	54	19	2	2	18	2		4	15	42.5	11	127
Social Intellectual	10	183	3	6	42	1	1	10	7	66.3	13	276
Social Conventional			17		1	1			3	73.9	1	23
Social Enterprising			2	8	10	1	1			34.8	1	23
Social Artistic	4	20	4	4	553	1		25	37	83.8	12	660
Conventional	2		1		1	5				55.6		9
Artistic	1	3	2		34			73	19	52.1	8	140
Undecided	1	7	1	1	28			11	24		12	85
No Response	5	4			16			2	7		9	43

Table 7

Prediction of Final Vocational Choice from VPI High-Point Code
(Fall Sample, Women, N=1386)

VPI High-Point Code	Final Vocational Choice											
	Int	Soc Int	Soc Conv	Soc Ent	Soc Art	Conv	Ent	Art	Und	% Hits	NR	Total
Realistic		2	1							0.0		3
Intellectual	46	64	4	2	55	1		17	25	20.3	13	227
Social	14	111	18	7	481	3	1	38	54	81.9	26	753
Conventional	5	9	5	2	12	5		3	5	10.0	4	50
Enterprising		7		3	16	1	_	2	5	0.0	2	36
Artistic	12	43	4	7	139	1	1	65	23	20.5	22	317

Table 8

Prediction of Final Vocational Choice for Students Whose First Two Choices Fall in the Same Class
(Fall Sample, Women, N=545)

1st & 2nd Vocational Choice	Final Vocational Choice										
	Int	Soc Int	Soc Conv	Soc Ent	Soc Art	Conv	Art	Und	% Hits	NR	Total
Intellectual	25	7			1		1	3	65.8	1	38
Social Intellectual	2	85	2	2	5	1		1	85.0	2	100
Social Conventional			8			1		1	72.7	1	11
Social Enterprising			1	1					50.0		2
Social Artistic	2	8	1		299		8	13	88.5	7	338
Conventional	1										1
Artistic		1	1		8		23	2	60.5	3	38
Undecided								1			1
No Response	1	3			5		1	5		1	16

efficiently than asking the student (0.0 to 81.9 percent). And the formation of a sub-sample of women whose first two choices belong to the same class yields the most efficient predictions--50.0 to 88.5 percent. Table 8 again demonstrates that students whose first two choices belong to the same vocational class are more predictable than students whose choices belong to different classes (32.6 to 78.9 percent).

Because of the controversial character of the results obtained for the fall sample, the same analyses were performed for the spring sample with similar results. These analyses involve a longer interval of time (one year instead of eight months) and a different stage of college life (the end of the freshman year to the end of the sophomore year, as opposed to the beginning of the freshman year to the end of the freshman year). Table 9 is a summary of the main results. Without exception, the results in Table 9 replicate what we found earlier--expressed vocational choice is clearly and substantially superior to the Vocational Preference Inventory.

Table 9

Summary for Spring Sample

Kinds of Prediction	% Correct Predictions	
	Men (N=1773)	Women (N=2336)
Expressed Vocational Choice--Total	68.7	78.2
VPI--Highest Scale	45.1	59.6
Expressed Vocational Choice--Same	82.5	86.4
Expressed Vocational Choice--Different	64.2	71.9

Vocational Choice and Role

The following analyses were performed to see how well we could predict a student's later vocational choice when his preferred vocational role was considered along with his first vocational choice or his VPI scores. When he took the American College Survey, he responded to the following item:

What special role would you like to play <u>within</u> your present occupational choice? (Mark one)

Being a practitioner of my occupation
Training or teaching others about my occupation
Leading or supervising people
Doing research in my field
Acting as a consultant or expert to others
Undecided
Other role

Table 10, a summary of 24 tables, presents the predictive efficiencies of a student's highest VPI score <u>and</u> his role preference, and his expressed vocational choice <u>and</u> his role preference. With one exception, students who prefer the roles of practitioner, teacher, leader, researcher, or consultant are more likely to give the same or closely related vocational choice eight months later than are students who fail to respond, or who respond "undecided" or "other role." The underlined percentages within the six classes indicate the classes and vocational roles that appear to go together--where the best predictions should be obtained. The efficiency of the predictions obtained for expressed choice <u>and</u> vocational role approximate those obtained by sub-grouping students whose first two choices belong to the same vocational class.

In short, we can predict vocational choices most accurately by one of two simple methods: (1) ask the student about his first two vocational

Table 10
Predicting Vocational Choice from First Two Vocational Choices and Preferred Vocational Role (Fall Sample)

Voc'l Choice	Preferred Vocational Role, Men (N=1207)											
	Und., Oth., NR		Pract.		Teacher		Leader		Research.		Consult.	
	f	% hits	f	% hits	f	% hits	f	% hits	f	% hits	f	% hits
1st & 2nd Same												
Real	8	75.0	18	83.3	1	0.0	4	75.0	9	66.7	7	85.7
Int	54	70.4	94	84.0	18	83.3	9	33.3	120	80.8	11	63.6
Soc	11	54.5	25	80.0	11	90.9	5	80.0	4	100.0	4	75.0
Conv	3	66.7	5	100.0	1	100.0	0	0.0	1	100.0	4	75.0
Ent	19	78.9	35	85.7	1	100.0	21	85.7	2	0.0	10	50.0
Art	4	50.0	20	70.0	1	100.0	3	100.0	1	100.0	1	100.0
Total		69.7		82.7		84.9		73.8		79.6		67.6
1st & 2nd Different												
Real	31	58.1	42	66.7	6	66.7	12	75.0	12	50.0	6	83.3
Int	75	48.0	77	55.8	19	47.4	13	46.2	29	58.6	6	83.3
Soc	25	52.0	32	75.0	13	84.6	14	50.0	9	22.2	7	85.7
Conv	17	47.1	12	75.0	0	0.0	2	0.0	1	100.0	13	92.3
Ent	47	51.1	52	63.5	3	66.7	22	68.2	5	60.0	14	64.3
Art	18	50.0	14	57.1	10	70.0	1	100.0	2	50.0	1	0.0
Total		50.7		63.3		64.7		59.4		51.7		78.7
	Women (N=1258)											
1st & 2nd Same												
Int	7	42.9	12	83.3	2	50.0			17	64.7		
Soc-Int	22	95.5	55	81.8	7	71.4	5	80.0	11	90.9		
Soc-Conv	2	50.0	5	80.8	3	100.0					1	0.0
Soc-Ent			1	100.0	1	0.0						
Soc-Art	48	79.2	194	92.3	41	80.5	29	89.7	5	60.0	21	95.2
Conv	1	0.0										
Ent												
Art	9	55.6	17	64.7	8	75.0	1	100.0			3	0.0
Total		76.4		88.0		77.4		88.6		72.7		80.0
1st & 2nd Different												
Int	27	14.8	26	53.8	3	0.0	1	100.0	27	25.9	5	60.0
Soc-Int	40	42.5	74	68.9	19	36.8	24	50.0	13	61.5	6	50.0
Soc-Conv	2	50.0	8	75.0	1	100.0					1	100.0
Soc-Ent	1	0.0	10	30.0	2	0.0	4	75.0			4	25.0
Soc-Art	93	74.2	140	84.3	34	73.5	28	82.1	11	63.6	16	75.0
Conv	6	66.7	1	100.0			1	0.0				
Ent												
Art	30	30.0	42	61.9	13	38.5	4	75.0	2	0.0	11	63.6
Total		52.3		72.8		52.8		67.7		41.5		62.8

choices, or (2) ask him once about his vocational intentions and then ask him for his preferred vocational role. Either of these methods is almost twice as efficient as the Vocational Preference Inventory.

Discussion

Most of all, the results suggest that educators, researchers, and counselors should make greater use of a person's expressed vocational choices and that interest inventories should be used with more discrimination. The results also raise a number of questions: (1) Would we obtain similar results--the superiority of expressed over measured interests--if we had used well established inventories like the Strong Vocational Interest Blank or the Kuder Preference Record? (2) Does the classification scheme used in the present study provide the kinds of predictions students and counselors want, and is it useful for this purpose? And (3) would we obtain similar differential validities over longer intervals of time and for people of different ages?

The data for satisfactory answers to these questions are either not available or not sufficient. For example, the earlier study revealed that six scales of the Strong were not as efficient as expressed choice for similar samples[1] over a four-year interval. The percentages of hits (prediction over four years to the same six-category system) equaled 28.2 percent for the Strong and 56.3 percent for expressed choice (see Tables 4 and 8, Holland, 1963). This experience suggests, but does not demonstrate, that counselors using all scales of the Strong or some other interest inventory would not be expected to surpass expressed choice in other predictive studies.

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[1]The two samples differ because 74 rather than 100 percent of the students filled out the Strong.

We need comparative studies of expressed and measured interests employing a single classification scheme on the same population for several instruments and for several time intervals. A review of the predictive validities for the Strong and the Kuder inventories versus expressed choice quickly reveals a morass of criteria, classifications, predictive formulae, and counseling contaminations that usually defy any reliable extrication (Berdie, 1950; Strong, 1943; Darley & Hagenah, 1955). This situation prevails because most predictive studies are primarily concerned with establishing the validity of an inventory so that the predictive validity of expressed choice, if studied at all, receives only cursory treatment.

The predictive efficiency of expressed choice in the present study is due mainly to the use of a classification system. The present classification, like many classification schemes, groups similar vocational choices so that it is possible to distinguish small and large differences. Such an orientation--calling attention to occupational groups rather than single occupations--is precisely what students need and what counselors strive for. Because we have usually evaluated the predictive efficiency of expressed choice in terms of identical vocational choices from one time to the next, we have treated any change in vocational choice as a gross change and missed the opportunity to examine the different degrees of change that a useful classification reveals.

If the present study and its predecessor are persuasive, then we could abandon the routine use of interest inventories in freshman orientation programs and rely on what students tell us. Those students who are undecided or who give successive choices that fall in different vocational

classes might be given the option of taking an interest inventory. In making predictions in vocational counseling, it may be constructive to rely more upon a person's vocational choice and history of such choices than upon interest inventories. Interest inventories may be most useful for characterizing the poles of a person's conflicts about vocations and for similar diagnostic and treatment purposes. The potential values of this orientation need more investigation, but it seems unwise to continue to believe that interest inventories are always needed in the sense that one always needs a yearly physical.

In the ACT program, the Student Profile Section items on vocational choice and vocational role clearly have substantial forecasting ability. And until interest inventories approach the same high level of efficiency, there is no compelling evidence for the introduction of an interest inventory into the ACT assessment. Colleges which want to do so can identify students in need of counseling by finding "undecided" students via the Student Profile Section, or students who cannot designate a vocational role they prefer to play.

Looking ahead, it appears quite plausible that interest inventories will have greater use as vehicles for creating better classification schemes for occupations, preferences, client problems, and occupational material, and for theoretical work generally. The great majority of counseling problems may become amenable to various classifications of expressed choices and associated theories.

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